Materials enabling breakthrough battery performance

Ampcera

Ampcera Quarterly Update – Q3, 2024

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What's ahead

INTRODUCTION

Dear reader,

As we continue to drive the transition to clean energy, Ampcera remains dedicated to developing innovative battery solutions.

In this Q3 update, we'll share our progress in advancing our next-generation technology, scaling our innovative manufacturing process and our continuous effort toward accelerating the commercialization of solid state electrolytes material technology.

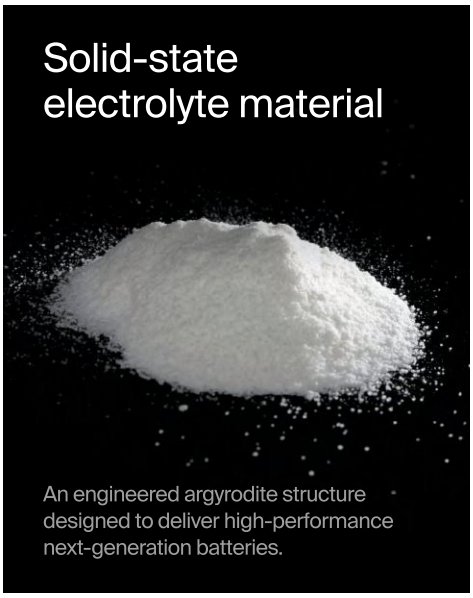
We also continue to secure government funding for projects awarded to us in 2023 and remain dedicated to advocating for electrification and investment during key industry events.

You can read about these developments and more in this quarterly edition of the newsletter.

ADVANCING TECHNOLOGY

Building larger battery cells, lowering stack pressure

Ampcera's proprietary materials platform continues to be a cornerstone of our progress. This platform, built on solid-state electrolytes, optimized cell components, and advanced manufacturing techniques, enables us to deliver high-performance batteries across multiple markets.



In Q3 2024, Ampcera significantly advanced its solid-state battery technology. Key achievements include:

Larger Cell Size

Aligning to our year-end goals, Ampcera is proud to announce the successful development of >1 Ah pouch cells, a crucial step towards commercial applications.

Reduced Stack Pressure

Ampcera implemented strategies to reduce stack pressure to less than 3 MPa through interface engineering, electrode formulation, and electrolyte optimization without compromising performance in critical metrics.

Enhanced Energy Density

We boosted energy density by enhancing high-nickel NMC areal loading and addressed rate performance degradation through extensive binder screening.

Improved Fast Charging

Achieved 80% state-of-charge in 15 minutes at higher areal loadings with optimized binder formulations, demonstrating fast charging capabilities.

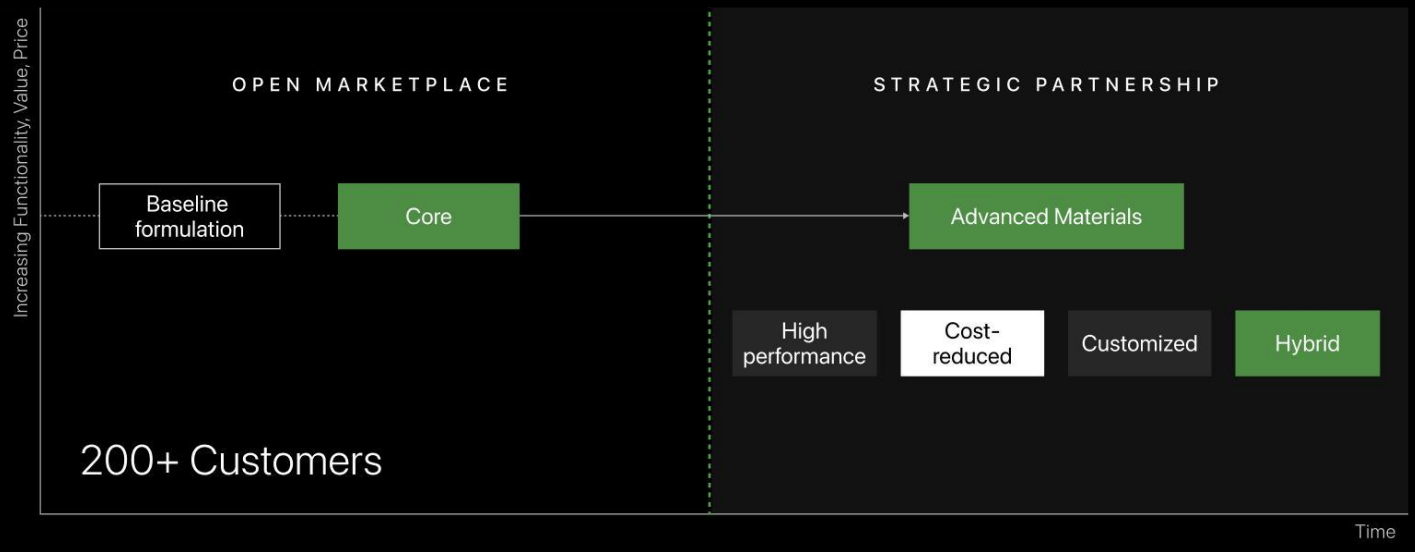
In Q4, Ampcera aims to further lower stack pressure and increase cell size, advancing practical solid-state battery applications.

Learn more ↗

SCALING MANUFACTURING

Scaled up to 1 ton per year, achieved batch-to-batch consistency

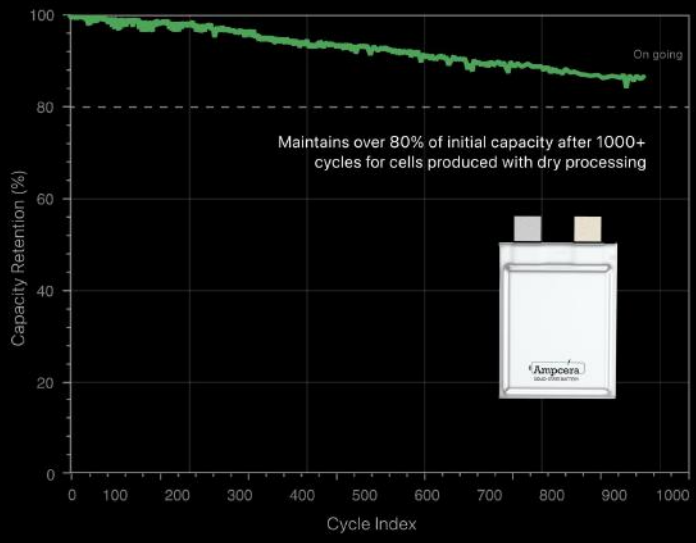
Ampcera has enhanced its production capabilities to meet market demand for tailored, cost-effective, high-quality materials with consistent output. In Q3, Ampcera scaled pre-pilot production to 1 ton/year of its standard baseline material, now used by 200+ partners. Our industrial pilot production (12 ton/year) is scheduled to completion in Q4. Importantly, we offer customized, high-performance materials to strategic EV and cell OEM partners, focusing on continuous process improvement and scaling up for future partnerships.



Ampcera's dry electrode manufacturing process for solid-state batteries eliminates electrode drying steps, reducing costs and CO_2 emissions by over 60%.

This process enhances energy density and enables thick electrode fabrication. Ampcera's sulfide solid-state electrolyte technology can achieve 1,000 cycles with over 80% capacity retention.

Pouch cell performance



BUSINESS DEVELOPMENT UPDATES

We have begun delivering all-solid-state battery cells to automotive OEMs

Deliveries to clients and strategic customers

Ampcera expanded its customer base, delivering sulfide solid electrolyte material to existing and new clients. Our diverse clientele includes universities, academic institutes, national laboratories, and major automotive and cell OEMs. Serving them with standard electrolyte materials validates our products and informs future development. We onboarded new strategic clients, including an automotive company and a battery cell manufacturer.

Cost model

In Q3, Ampcera developed a viable pathway to achieve a battery cost below $100/kWh. The cost analysis examined all three components of the value chain— lithium sulfide precursor, sulfide solid electrolyte, and the solid-state battery cell— to determine a feasible approach to meet customer expectations.

Precursor	Electrolyte	Battery
Lithium Sulfide (Li_2S)	Sulfide Solid Electrolyte	Solid State Battery
<$45/kg	<$50/kg <$25/kWh	<$100/kWh

Government grants

Ampcera has successfully secured second phase of ARPA-E EVs4ALL funding of $1.8 million based on project progress and periodic review in Q2.

Learn more ↗

COMPANY NEWS

Global discussions on commercializing next-generation battery technologies

Our Head of Business Development and Commercial, Abhishek Kumar, participated alongside global industry leaders and entrepreneurs in a discussion on how collaboration and investment can drive the commercialization of battery technology and contribute to a sustainable, prosperous future.

Arizona Innovation Expo

September 25, 2024 | Phoenix, AZ

We participated in the Arizona Commerce Authority and Plug and Play event to explore the future of tech innovation and discuss why the U.S. must prioritize advancing energy storage to address supply chain and technology challenges with current lithium batteries. Instead of reinventing the past or playing catch-up with China, the U.S. should focus on the future—solid-state batteries.

Read more

COMPANY NEWS

Flex & KPMG Automotive Innovation Summit 2024

September 25, 2024 | Phoenix, AZ

Abhishek highlighted a key issue in the U.S.: the manufacturing of next-gen energy storage technologies is fragmented, with disconnected companies pursuing their own agendas. This prevents achieving economies of scale, as too many players are operating independently at small output levels. There is still no Western equivalent to the Asian giants like CATL, SVOLT, BYD, Samsung, Panasonic, and LG. What's needed are a few companies producing on a massive scale, rather than hundreds of smaller companies with varying goals, which would only lead to inefficiency and chaos.

Read more

Solid-State Battery Summit

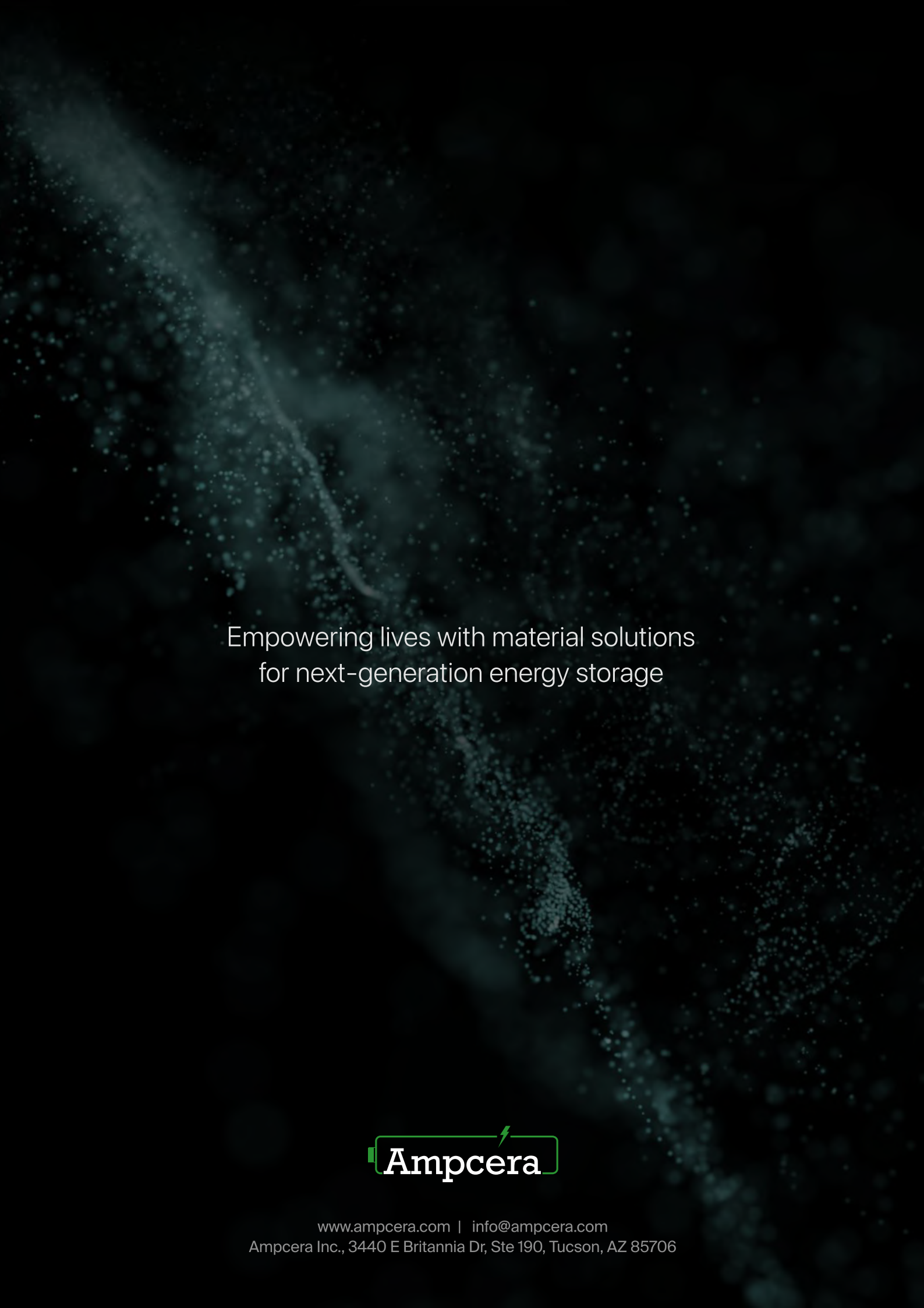
August 22, 2024 | Chicago, IL

Ampcera highlighted its advancements in cell builds, stack pressure reduction, and dry manufacturing processes, paving the way for a promising future in solid-state batteries.

Read more

AMPCERA'S CORPORATE VIDEO

Ampcera | Powering towards a sustainable future



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